

### REMARKS

In the Office Action of August 11, 2003, claims 1-21 were examined. Claims 6, 8, 9 and 18 were rejected under 35 U.S.C. §112, first paragraph; claims 1-10 were rejected under 35 U.S.C. §112, second paragraph as indefinite; claims 1-3, 4, 7 and 21 were rejected under 35 U.S.C. §102(b) as anticipated by Burke; and claims 11, 12, 14-17, 19 and 20 were rejected under 35 U.S.C. §102(b) as anticipated by Lipcon. Claim 13 was only objected to as depending on a rejected base claim and claims 5 and 8-10 were indicated to be allowable if rewritten to overcome the §112, second paragraph rejection.

The Office Action also objected to the specification.

### Specification

The Examiner contends that the disclosure in the specification on page 7, lines 15-18 is confusing. The Examiner states that in Figures 5 and 6 when the bridge current driver is selected, the termination elements are not coupled to the mid-point termination voltage, because there are no termination elements connected to the bridge current driver and no mid-point termination voltage shown in Figures 4 and 6. Applicant assumes the Examiner intended to specify Figures 5 and 6, rather than Figures 4 and 6, as Figure 4 is prior art. Assuming that this is what was intended, Applicant respectfully disagrees. The termination elements are indeed coupled to the mid-point termination voltage. An examination of the circuit of Figures 6a and 6b clearly shows that the coupling between the termination elements and the mid-point termination voltage is provided via the bridge current source drive 52. The bridge current drive 52 has Vmid as an input and has output signals Txp and Txn. Txp and Txn are coupled to the termination elements 53 (r9) and 54 (r10). The signal Vmid is defined on page 11, lines 2 to 4 of the specification as being the mid-point termination voltage having a value of one-half the supply voltage. The application of signal Vmid influences the value of the output values of the bridge current drive 52, Txp and Txn, which in turn are coupled to the termination elements 53 and 54. Figure 5 has been amended to make explicit that Vmid is an input to both the bridge current driver and the voltage driver. This is not new matter, as Fig. 7 showed Vmid and page 13 states that Fig. 7 is an equivalent circuit to Fig. 6 and page 12 relates Fig. 6 to Fig. 5. Also, the amendment to Fig. 5 merely conforms it to the claims.

**Claim Rejections: 35 U.S.C. §112, first paragraph**

IN REJECTING CLAIMS 6, 8, 9 AND 18, THE EXAMINER HAS INDICATED THAT NONE OF THE FIGURES OF THE PRESENT APPLICATION SHOW THAT "THE DRIVER CIRCUIT OPERATES TO LIMIT THE OUTPUT VOLTAGE TO ABOUT ONE-HALF OF THE SUPPLY VOLTAGE" AS RECITED IN CLAIM 6. THE EXAMINER STATES "THAT THE OUTPUT (OUTP) VARIES BETWEEN THE GROUND AND (V<sub>CC</sub>).\" (Emphasis original.) Unfortunately that is inaccurate because it misdefines the output. As stated on page 13, lines 12-14, \"The amplifier signals are referenced to half the power supply voltage, V<sub>mid</sub>=1.65v.\" That is, they are not ground-referenced. So the swing is limited to about half the supply voltage. As mentioned above, the amended Figure 5 and Figure 6 illustrate V<sub>mid</sub>. Furthermore, as V<sub>mid</sub> is clearly defined on page 11, lines 2 to 4 as being the mid-point termination voltage having a value of one-half the supply voltage, the specification thus is perfectly clear. This explanation equally applies to the Examiner's objections to claims 8, 9, and 18.

The Examiner also indicates that the recitation \"control means for selecting between the first and second driving means\" in claim 1 is indefinite because it is misdescriptive. The Examiner states that assuming the first driving means is Pamp4 and the second driving means is Pamp2, then the second driving means does not receive any control signal from the control means, and therefore that the control means cannot \"operate to make only one of said first or second driving means active at any one time\". The Examiner has correctly pointed out that the first driving means *may* correspond to Pamp4 and the second driving means *may* correspond to Pamp2. In such arrangement, the control means acts on Pamp4 *indirectly*, as is explained in the specification on page 14. The Examiner is requested to examine Figure 8 in this regard, as Figure 8 (not Figures 5 and 6a) details the logic circuit of current amplifier Pamp4, the first driving means. Figures 5 and 6a, instead, show the circuitry of the invention at a higher level. As shown in Figure 8, when the Enable signal (control means) is at gnd, enb (the logic control input signal) is high and en (the logic complement of the logic control signal) is low. This turns off the bridge current drive, i.e. the first driving means, but does not influence the second driving means i.e. pamp2, so that only the second driving means is active at this time. In contrast, when Enable is low, enb is low and en is high, and the bridge current drive turns on and the voltage drive is consequently switched off. This explanation equally applies to claims 2 and 3.

The Examiner asserts that the recitation "control means for selecting between the bridge current driver and the voltage driver" in Claim 8 is indefinite because it is unclear how the voltage driver is selected, since there is no control signal connected to the voltage driver. Applicant does not fully understand the Examiner's interpretation of claim 8. The control signal acts indirectly on the voltage driver, as explained in detail in the previous paragraph.

The Examiner further states that it is unclear how the "terminating elements" are connected to the "mid-point termination voltage". This has been explained in a previous paragraph. The Applicant would also refer the Examiner to the paragraphs above to clarify how the bridge current driver and the voltage driver are selected, as requested by the Examiner. The Applicant has pointed out the control means, terminating elements, and the connection between the terminating elements and the mid-point termination voltage with reference to Figures 5, 6 and 8 above. The supply voltage  $V_{cc}(V_{dd})$  is shown in Figure 8, which, as previously pointed out, details the circuitry of Figure 5 in more detail.

The Examiner also contends that it is unclear whether the terminating elements on line 20 (of claim 8) is the same or different than the terminating elements on lines 15-16. The Applicant would like to clarify that the terminating elements are the same, and are r9 and r10. Applicant has amended Figure 5 to clarify that resistors referenced as 52 and 53 are r9 and r10. These termination elements are connected as termination elements for Pamp4, as discussed in detail above. The termination elements are also connected to Pamp2, as can be seen from Figures 5 and 6. This is also detailed on page 10, lines 14-15.

Consequently, it should now be plain that Claims 4, 5, 7 and 10 are definite.

**Claim Rejections: 35 U.S.C. §102(b)**

The Office Action asserts (Office Action, page 5) that the separately enabled current source drive and voltage source drive for the same pair of lines (previously argued by Applicant as distinguishing) are not disclosed in claim 1, and that therefore the claimed structure is fully met by Burke. Although Applicant does not concede that the claimed structure is fully met by Burke, Applicant has amended claim 1 so as to introduce expressly the feature that the first drive means comprises one or more current sources connected in a bridge configuration, namely to introduce the features of claims 4 and 5. Original Claims 4 and 5 have been cancelled.

Claim 5 has been indicated to be allowable (except for the §112 issues as to claim 1, resolved above).

Independent Claim 11 has been amended similarly to Claim 1; namely, to introduce the features of claims 12 and 13, the latter being cancelled. Independent method Claim 21 has also been amended in a similar fashion to the amended independent apparatus Claims 1 and 11.

While the Applicant does not concede that any claims were anticipated by Lipcon, these amendments also overcome the rejection over Lipcon since claim 13 had not been rejected over Lipcon.

**Response to arguments submitted by the Applicant on May 28, 2003.**

In response to the Examiner's comments, Applicant wishes to put on record that the Office Action mischaracterizes Applicant's prior response. Applicant clearly did not argue that Burke appears to anticipate the claimed invention. The partial quotation is presented out of context, creating a false impression. Manifestly, Applicant posited that the Examiner's efforts to make Burke appear to anticipate the claimed invention had no real basis, and Applicant does not believe that Burke anticipates or teaches the claimed invention in any way. Applicant pointed out in the May 28, 2003 response that it was the title of the Burke patent which was simply being referenced as a basis for the Examiner's misinterpretation of the reference. Burke clearly does not disclose the circuit of the claim, contrary to the Office Action, and Applicant was merely saying that if one dug deeper than Burke's title, and did not allow the title to mislead, that would have been clear. Applicant is thus somewhat confused as to how the Examiner can have taken out of context or misunderstood Applicant's previous statement regarding the title of the Burke patent.

**Conclusion**

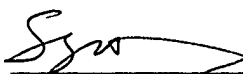
In summary, therefore, Applicant has answered the objections raised in the Office Action. Claims 1 and 11 are amended to include that a first driving means includes one or more current sources which are connected in a bridge configuration. Claim 1 is also amended to include the features of claims 4 and 5, claim 11 is amended to include the features of claims 12 and 13, and claim 21 is amended to include all the features of amended independent apparatus claims 1 and

BEST AVAILABLE COPY

11. Figure 5 is amended to show the Vmid signal and to show the resistors referenced by 52 and 53 are r9 and r10 for convenience.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicant hereby requests any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to deposit account No. 23/2825.

Respectfully submitted,



Steven J. Henry  
Reg. No. 27,900  
Wolf, Greenfield & Sacks, P.C.  
600 Atlantic Avenue  
Boston, MA 02210-2211  
(617)720-3500

Docket No.: T0461.70003 US00  
Date: January 15 , 2004

x02/11/04

BEST AVAILABLE COPY